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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •



JUNE 8, 1935

Beast of Baluchistan

See Page 370

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SCIENCE SERVICE PUBLICATION

SCIENCE NEWS LETTER

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The Weekly Summary of
Current Science
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DO YOU KNOW?

The Soviet Union has 67 radio broadcasting stations, using 62 languages.

Straw hats made in Germany this year will contain little, if any, straw, but will be made of paper yarn and special rayon "straws."

The Turkish Government has given an American expedition permission to excavate at Tarsus, home city of the Apostle Paul.

A British company is producing a new window glass, the basis of which is glass threads so finely drawn that a bundle of them is like a wisp of silk.

So adaptable is the leopard in its "typical feline activities," that it can pounce upon a sparrow or strike down an ox, says Dr. W. H. Osgood, zoologist.

The screw worm, notorious pest of the Southwest, invaded Texas and southeastern States last year and killed thousands of dollars worth of livestock before farmers knew what was happening.

Manufacturers have succeeded making "zipper" fasteners of plastic material in various colors.

The Chinese Government is taking steps to locate a suitable route for a highway across Central Asia.

A historian, writing of Roman days, says that a large number of public buildings in Pompeii were gifts from private citizens.

Air carries as much soil as water—possibly more—from one part of the country to another, says the Department of Agriculture.

Three new varieties of carnation created in government greenhouses are described as "of easy culture, readily propagated, and free flowering."

Written on rolls of papyrus, as they doubtless originally were, New Testament books would be of this length: Matthew 30 feet; Mark 19 feet, Luke 31 feet, John 23 feet, 6 inches.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the articles.

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PLANT PHYSIOLOGY

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CHEMISTRY—GEOLOGY

Canadian Scientist Finds Evidence of "Lost" Elements

From Stone Doorstep and From Bathing Beaches Are Gathered the Signs of Elements No Longer on Earth

IN A CHIP chiseled from the front door-step of his college; in the sands of Nova Scotia's famed bathing beaches, and in specimens of biotite mica from the Orient, Dr. George H. Henderson, of King's College, Dalhousie University, Halifax, has found evidence of what may prove to be unknown chemical elements no longer existent on the earth's surface.

In an interview at the meeting of the Royal Society of Canada, Dr. Henderson said he had recently discovered at least three new types of pleochroic haloes which have so far been inexplicable as due to already known elements. The time required for their formation, possibly only a few hours or days, although perhaps as great as one hundred years, is much too short to be compatible with geological evidence.

"A pleochroic halo, one of the most striking manifestations of radioactivity," Dr. Henderson said, "might be compared to a photographic negative. It is caused by alpha rays emitted by members of the uranium family of elements as each disintegrates to form the next in the atomic scale. The rays emitted during this disintegration of the uranium crystal act upon mica and certain other minerals in a similar manner to that in which light affects the silver salts of a photographic film."

Measured By Photometer

A dark spot is produced in the mica around the uranium particle. This is surrounded by a series of six concentric dark rings, whose diameter is measured with a halo photometer designed by Dr. Henderson, which allows more accurate determinations than are possible with a microscope.

"The sizes of these halo rings made millions of years ago corresponded exactly with recent laboratory observations on radioactive elements," Dr. Henderson said. "This proves conclusively that the laws of physics as we know them today held good even at the time of formation of the earth's crust. The largest outer ring is no greater in size than a human hair in diameter."

As these haloes disappear at tempera-

tures around 900 degrees Fahrenheit, Dr. Henderson infers that the precambrian rocks from which much of the mica was obtained cannot have reached that degree of heat since they were formed.

Science News Letter, June 8, 1935

ARCHAEOLOGY

Document Shedding Light On Bible Characters Read

A PRICELESS old document that may shed new light on John the Baptist and the Apostle Paul has been salvaged from the limbo where forgotten manuscripts lie, and translated laboriously.

No exaggeration in that word "laboriously."

A scholar of Hebrew has spent 18 years reading the manuscript, and there are just nine pages of it. While the

World War banged around him, this American worked peacefully in Berlin. Three of his 18 years he did practically nothing else but study those badly written, mutilated sheets of precious parchment. And at that, he was hammering at writing that had already been translated—though he disagreed strongly with many points.

How he has discovered that this extraordinary manuscript has "even greater significance" than Semitic authorities gave it, is told by the patient translator, Rev. Jacob Quiring, formerly professor at Bluffton College in Ohio. In a new volume of scientific studies titled "From the Pyramids to Paul," contributed by various scholars, he announces that the "nine priceless sheets of parchment" reveal a vivid and unforgettable picture of Jews in 172 B.C., trying to keep their faith and standards when Greek paganism swept over Palestine. Historically, this is near the close of Old Testament time.

Written with flaming pen, this tract was intended for circulation among synagogues of faithful Jews. Beware, it warned them, the Syrian tyrant Antiochus and his hireling Jeshua, who are leading the people into pagan wickedness. The writer was one of the loyal Jews who had fled to the region of Damascus.



"CANDLING" OSTRICH EGGS

Soviet Russia, where planned production of all kinds has become almost a national religion, has an "Ostrich Plan," too. In the Ukraine, southern member of the U.S.S.R., the climate permits the practicable raising of ostriches as it does in California and Florida in the United States. Some of the hatching is done in special incubators. The young Soviet workers are "candling" a tray of the huge eggs, to see whether any of them have spoiled. The Plan: first raise enough ostriches to stock all the zoological gardens in U.S.S.R. cities, then start production for the great State farms on the steppes.

"Was John the Baptist familiar with this document, whose stern denunciations of a faithless hierarchy he afterwards repeated?" asks Mr. Quiring.

And did the Bible character Paul win his first Christian converts at Damascus—where he himself was dramatically converted—among the descendants of those Jews who chose exile rather than disloyalty to their ancient faith?

The answers to these questions are not clear yet, says Mr. Quiring. But there is no doubt that the picturesque and important document is background information on the history of these characters.

The nine parchment sheets from which

Mr. Quiring reads this historic text are a medieval copy of the original, vanished work. The pages date from about the tenth century. They are badly spelled, written by two medieval scribes, one a little more careless than the other, and the pages are blurred and mutilated. The very first word is smeared with a greasy thumb print so plain that the police would have no trouble identifying the careless bookman if he were alive today.

With such handicaps, a scholar who reads nine pages in 18 years and recovers an eyewitness report of a troubled and obscure period of history, is not making such slow progress.

Science News Letter, June 8, 1935

PSYCHOLOGY

Man Who Is "Life of Party" Makes an Unhappy Husband

Happy Wife Is Like Solomon's Ideal But a Divorced Woman Is Less Mercenary, Psychologists Find

GIRLS, if you want to have a happy married life, don't pick as your husband a fellow who is the life of the party, one who is good fun at dances, or who is always ready to take charge of an entertainment.

This advice is gleaned from a study of the personalities of 300 couples made by Dr. Lewis M. Terman and Miss Winifred Bent Johnson, of Stanford University. (*Character and Personality*, June).

One hundred happily married couples were compared by these psychologists with 100 who were unhappily married and 100 who were already divorced.

Conservative people are the ones who are most likely to be happy in marriage, they found.

The happy husband is outstandingly cooperative. He works well with others, is not touchy or grouchy, is not critical of others. But he is not the jolly fellow type of good mixer. He prefers going to see a play to attending a peppy dance, and is quite content with a quiet evening at home.

The happy husband is more kindly than his less happy brethren toward old people, the sick, or those with deformities and personal peculiarities.

But he does not like talkative people.

The happy wife is typically an old-fashioned girl. She exemplifies the kind of feminine virtue familiar in the old-fashioned protected matron and the wom-

an extolled in the Bible by Solomon. (See Proverbs 31:10).

Happily married women are the most sociable of all the groups. They enjoy things more when they are with others. They just love to go on picnics, to amusement parks, and conventions.

They like working with others, they like to talk things over, and don't want to stay at home alone. Yet they are shy, blushing more often than the other groups, hesitate more to meet important people.

They are steady, amiable, and optimistic, are less touchy and nervous than their unhappy sisters.

They dislike Bolsheviks and smokers. Divorced women, despite popular

opinion, are less mercenary than either happily or unhappily married women. They are more likely to lend money. Have less respect for thrift. And are more interested in work for its own sake than for the financial returns.

The divorced woman offers many contrasts to the other groups of women. She has more intellectual interests, more self-reliance, assertiveness, and ambition. Her most outstanding trait is a tolerance toward the peculiarities of others. She doesn't object so much to queer, abnormal, or exceptional people. She can even put up with men who chew tobacco, sent-minded people, Bolsheviks, people with protruding jaws, gruff men and emotional women, and people who talk too slowly.

But she doesn't like teetotalers, clergymen, or cautious people.

The woman who is married but unhappy is a negative sort of person. She is inclined to sociability, but she lacks the sympathy and tact which make for social harmony. She is inclined to be self-centered, irritable and intolerant.

The unhappy wife is the most neurotic, indecisive and unmethodical. She is a conservative, but thinks of herself as a radical.

She lacks the warm sympathy and emotional balance of the happily married woman. And she lacks the rugged individualism, ambition, and efficiency of the divorced.

The unhappily married man likewise has a personality between the happy husband and the divorced man, but he shows somewhat greater resemblance to the latter. He does not have the self-discipline and amiability necessary for success in human relationships, and yet he does not have the aggressive qualities that would enable him to face the unpleasantness of divorce.

Science News Letter, June 8, 1935

HERE IS A HAPPY WIFE

According to Solomon

The heart of her husband doth safely trust in her.

She will do him good and not evil all the days of her life.

She seeketh wool, and flax, and worketh willingly with her hands. She riseth also while it is yet night and giveth meat to her household.

She stretcheth out her hand to the poor; yea, she reacheth forth her hands to the needy.

She openeth her mouth with wisdom; and in her tongue is the law of kindness.

She is like the merchants' ships; she bringeth her food from afar.

According to Modern Psychologists

She is more stable, more conservative, more conventional.

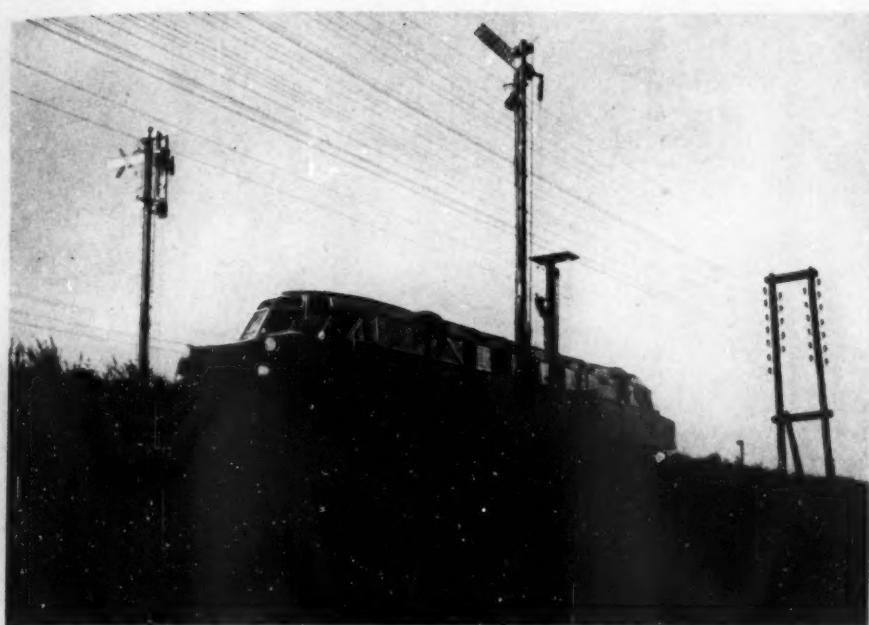
She is careful of others' feelings, instead less on having her own way.

She is a methodical and careful worker.

She is sympathetic toward the aged, sick, and crippled, and likes to gather funds for a cause and to contribute to charities.

???

She likes to go on excursions, and mingle with the crowds.



NEW AUSTRIAN RAIL BUS

This new railroad bus is the latest creation of the Daimler Motor Works in Vienna, Austria. Equipped with rubber tires for easy riding over steel rails, the streamlined, 73 feet long vehicle has a top speed of 93 miles an hour. Its wheels have steel flanges to keep on the track but the whole weight is supported by ordinary pneumatic rubber tires which absorb shocks.

PSYCHOLOGY

Adopts Alice-in-Wonderland World to Test Vision Theory

SPECTACLES with inverting lenses that would turn everything seen upside down and produce right-left reversal were worn continuously for two weeks by Dr. Joseph Peterson, psychologist of George Peabody College for Teachers, in an effort to test out why we see things as we do.

He wanted to know whether his eyes would become accustomed to such an Alice-in-Wonderland world so that objects would appear to him as right side up again, or whether he would have to go through the process of learning how to handle objects and how to move about so as to miss obstacles and touch desired things. Manipulation or other direct contact with objects in the optically artificially environment was found to be necessary as a basis for recognition of the objects.

In normal vision, the images of objects about us are turned upside down on the retina of the eye just as they are on the focusing glass and on the negative of a photographic camera. But we really see

in the brain rather than in the eye. How these images are set right side up again by the perception is something which has long been a puzzle to scientists. Some contend that the organism after practice will correct for this inverted vision. Others have thought that we learn by handling objects which way they are standing and come to interpret our vision in such a way that it fits in with the experience of our other senses.

Dr. Peterson's experiment seems to confirm the latter theory.

Science News Letter, June 8, 1935

PLANT PHYSIOLOGY

Blanching Celery, Apples Give Off Ethylene Gas

ETHYLENE gas, widely used to blanch celery, bring the glow of ripe color to the skins of fruit, and otherwise hasten the maturing of garden products, is actually generated by plants in the natural process of maturing for the market.

Such are the indications of researches conducted at the Minnesota Agricultural Experiment Station by R. C. Nelson and R. B. Harvey, and independently at the Low Temperature Research Station at Cambridge University, England.

In their experiments, Nelson and Harvey used young tomato plants as "indicators" for the gas. The response of a tomato plant to ethylene is characteristic. It arches its leaves downward.

These "indicator" tomato plants were put into closed glass vessels. Into similar vessels quantities of a self-blanching variety of celery were introduced. After two hours, the gases from the celery vessels were drawn into the glass prisons of the tomato plants. The leaf-stems of the latter curved downward strongly, showing that a compound with the physiological effects of ethylene was produced by the celery.

In a parallel test, using a non-blanching celery variety, the tomato plants did not respond: no ethylene was being produced.

Similar results were obtained in the Cambridge University experiments, in which the ethylene gas was produced by ripening apples.

Nelson and Harvey call attention to a practical significance of this discovery. When ethylene, best known as a constituent of illuminating gas, first began to be widely used for the treatment of fruits and vegetables, the question was raised whether it might not possibly have harmful effects.

Now, they state, "Since it has been shown to be produced by blanching celery under natural conditions, any fear of artificially using this gas should be removed from the minds of the public."

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GENETICS

Brown Eye Color Found To be Linked With Sex

INHERITANCE of brown eyes is connected with sex, but yellow-eyed persons get their eye color by an entirely different hereditary mechanism, it is indicated by a study of more than 5,000 persons whose eyes were examined by Prof. G. P. Frets, of Rotterdam, Holland.

Brown eyes are much more frequent among women than among men, Prof. Frets reported. (*Eugenical News*, Jan.-Feb.). Of the 5,334 persons examined, 514 had plain brown eyes. And 329 of these were women as against 185 brown-eyed men.

The blue-eyed group, those with blue

or blue-gray eyes, contained proportionately more men. This group was larger, 1,062 persons, and 504 of them were men.

The distribution of yellow coloring in the eyes does not seem to follow this scheme of discrimination between the sexes.

Eye color is apparently handed down from parents to children by means of two pairs of hereditary factors. There is one pair of factors for brown color and the absence of brown color which makes for blue eyes. Another pair of factors carries yellow and the absence of yellow. The first of these pairs seems to be linked in some way with sex.

Blue eye color appears to be a racial characteristic which causes the individuals in certain racial groups to have eyes that are blue with a little yellow in them and others with blue eyes. Probably no population has ever existed in which everyone had pure blue eyes, Prof. Frets said.

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CLIMATOLOGY

Great Lakes Act as Giant Air Conditioning System

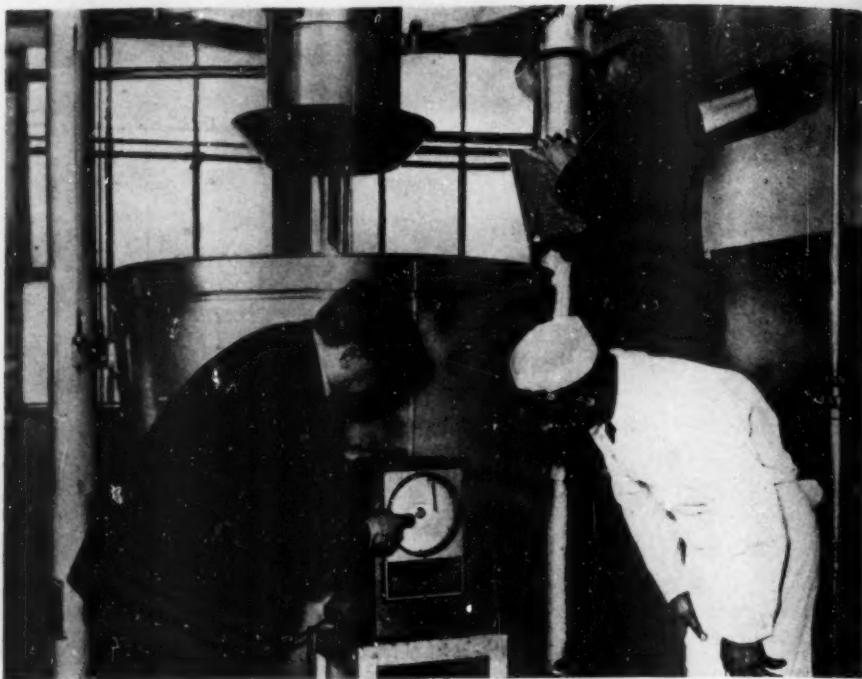
CANADA and the United States are joint owners of a tremendous and efficient air conditioning system—the Great Lakes. How this system works was described by Dr. John Patterson, director of the Canadian Meteorological Service, to the Royal Society of Canada.

In summer, these huge inland seas act to cool the air and remove excess moisture. In winter they reverse the process: the stored heat they have captured in summer goes back into the cold air, and at the same time they evaporate water to temper winter dryness.

Where in an ordinary drainage basin the amount of water surface is practically negligible when compared to the land area drained, a peculiar feature of the Great Lakes system is that the lakes themselves occupy more than one-third of the entire area from which they derive water. Thus there is a very large amount of evaporation from the water surface, in addition to that from the land, from transpiration of plants, and the many other factors involved.

The average amount of precipitation over the area is about twenty inches per year. Of this, Dr. Patterson and his staff have found that at least nine inches is lost in evaporation, which for the water surface alone this amount would be about three times as great.

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METERING THE SUNSHINE

Scientists are examining the new device for measuring the ultraviolet irradiation that puts the sunshine vitamin D into milk. On the left is Dr. H. C. Rentschler, Westinghouse Research Laboratories, and in the background holding the "electric eye" is Dr. G. C. Supplee, Borden Company.

PHYSIOLOGY

Find Way to Measure Amount Of Sunshine Vitamin in Milk

PARENTS and physicians alike rejoiced when it became possible to put vitamin D into milk. Milk is in many ways an ideal food for infants and children but it is sadly deficient in the sunshine vitamin, as D is often termed.

Now scientists have gone a step further and found a way to measure the amount of sunshine vitamin in the milk when it is put there by the action of ultraviolet light. This is important. Baby specialists and nutrition experts have recently pointed out that lack of such a measure was one serious drawback to relying on vitamin D-enriched milk as sole source of this vitamin.

The method of measuring the sunshine in milk was developed by Dr. H. C. Rentschler of the Westinghouse Research laboratories and tested by Dr. G. C. Supplee in the plant of the Borden Company, the dairy that holds the patent on the irradiation process for milk.

Strictly, Dr. Rentschler's newly-announced method does not measure the

actual amount of the vitamin. Instead it measures, by the photo-electric cell, the amount of ultraviolet light playing on the milk during every minute of the irradiation process.

This is all that is necessary to measure, Dr. Supplee explained, since scientists have known for years the amount of irradiation needed to impregnate the milk with the required amount of vitamin D. The big thing was to find a way of making sure that this required amount of ultraviolet light was reaching the milk constantly during the process, so that every quart of the irradiated milk delivered to a baby's home would contain the actual amount of vitamin D it was supposed to have.

Other ways of putting vitamin D into milk have been found besides the irradiation method, but Dr. Rentschler's new measure is useful only for determining the vitamin D content of irradiated milk.

Babies and children need this vitamin to make them grow strong and healthy.

and to protect them from rickets. The sun's ultraviolet rays will produce the vitamin by acting on the ergosterol of human skin. But in cities and most temperate zone countries the sun cannot be relied on as sole source of this vitamin.

Cod liver oil, well supplied with vitamin D, has been the standard way of giving

it to babies and children. Giving it in a glass of milk, a dish of cereal, a slice of bread or in some other food is much pleasanter and easier. Important, however, are tests like Dr. Rentschler's to make sure every day's allotment of the foods contains the amount of vitamin needed each day.

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MEDICINE

Anti-Beriberi Vitamin Now Used to Treat Diabetes

LARGE amounts of pure crystals of anti-beriberi vitamin B₁ are being given to diabetic patients with "extremely interesting" results. This suggests that this vitamin may become an important part of the treatment of some cases of diabetes.

This new use of the vitamin and new approach to the diabetes problem is announced by R. R. Williams, Robert E. Waterman and John C. Keresztesy of the Bell Telephone Laboratories. (*Science*, June 1). Mr. Williams and his associates developed a chemical method of obtaining the vitamin in pure crystalline form from rice polishings. Its use in diabetes is being tried by Dr. Martin G. Vorhaus of New York, who is scheduled to report further details at the coming meetings of the American Gastro-Enterological Association and the American Medical Association.

Lack of this vitamin has long been known to produce beriberi, a severe nervous disease chiefly confined to the Orient, where the native diet consists too exclusively of highly polished rice or other carbohydrate foods lacking in the vitamin. Disturbance in the way the body handles the carbohydrate foods such as potatoes and sugar is an important feature of diabetes. This disturbance has been ascribed to failure of part of the pancreas to produce enough insulin. Recent studies have indicated that vitamin deficiency might also affect the body's handling of the carbohydrates. Animals deprived of the vitamin develop certain symptoms similar to those found in human diabetes. These findings and the availability of the pure vitamin in relatively large amounts suggested its trial on diabetic patients.

A small amount of the pure vitamin will protect rats from beriberi, Mr. Williams and associates found, but this amount is evidently not sufficient for normal growth or good health. Their find-

ings suggest that a more abundant amount of vitamin B₁ is needed to protect people from a variety of less severe diseases than beriberi even though a small amount in the diet will prevent that disease.

Besides diabetes, Dr. Vorhaus suggests that it should be tried in such conditions as anemia, loss of appetite, loss of tone of the digestive organs, colitis and possibly some disorders of the endocrine glands.

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PSYCHOLOGY

Soviet Parachute Jumper Tells How It Feels to Leap

HOW it feels to jump at night from an airplane, drop in somersaults 11,800 feet keeping an eye on a stopwatch, and then finish the ride with a parachute is told vividly by a Soviet "parachute sport-master," M. Zabelin, in a news report from Tass, the telegraphic agency of the U. S. S. R.

Night jumps are far more pleasant than day jumps, says M. Zabelin:

"I sewed a stop-watch on to my left fur gauntlet, in order to be able to calculate the time of falling and the approximate distance from the earth. I adjusted an electric lamp on my chest.

"The airplane rose upwards. At a height of about 3,000 meters (9,842 feet) we discovered clouds advancing towards us, from the north. This cloudiness lowered our ceiling. All attempts made by the pilot Grek, to rise in such a manner so that the Cheliabinsk lights could still be seen, were futile. We decided to retain orientation and stop at a height of 4,500 meters (14,764 feet).

"The airplane made one more round, the pilot gave the signal to jump. I sat down upon the edge of the narrow cabin, lit my lamp and threw myself over backwards. Immediately upon leaving the air-

plane I set my stopwatch going. I fell involuntarily making somersaults in the air; after getting my body straight these somersaults became less frequent, but continued nearly the whole time while falling. I was obliged to find my bearings exclusively by means of my stopwatch, as the sky was completely covered with clouds.

"When my stopwatch showed 60 seconds I pulled the ring. A strong dynamic blow ensued, as the result of the opening of the parachute. The crosspiece of my spectacles broke while the tightly fastened girth on my legs gave a violent movement upwards.

"After finding the position of the bonfires of the aerodrome, I was able to determine my drift. Then, these lights disappeared and I unexpectedly felt a knock against the earth. Coming to myself after this knock, I found myself in the middle of a forest while my parachute hung on a tree. Far away, beyond the outskirts of the woods, I could see the Cheliabinsk lights and the airplane descending at the airport.

"I fell 3,600 meters (11,811 feet) without opening my parachute and then 900 meters (2,952 feet) with an open parachute."

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PHYSICS

Magnifying Lenses Made A Thousand Years Ago

LENSES of rock crystal, useable as magnifying and burning glasses, were made in the tenth century, a thousand years ago, by a Benedictine monk named Theophilus, reports Dr. Wilhelm Theobald, Berlin engineer. (*Forschungen und Fortschritte*, May 10).

Use of globes filled with water and specially polished emeralds and other jewels for magnification and making fire has been reported from Egyptian and classic antiquity, but not with the certainty and detail of the account written by Theophilus.

This ingenious medieval ecclesiastic left in his manuscript book of curious arts practised by himself a Latin description of the sawing, grinding and polishing of rock crystal blocks to make lenses that differs from modern methods in details but is identical in principle.

Theophilus made more of a point of the "fire-drawing" powers of his lenses than he did of their possibilities as magnifiers; this is perhaps understandable when the difficulty of striking a light with flint, steel and tinder is considered.

Science News Letter, June 8, 1935

MYCOLOGY

Scientific Body Thrives With Dues Paid in Fungi

DUES payable in fungi, not cash. That is the unique fiscal policy of a science society with headquarters on the campus of the University of California. It is the California Mycological Society, devoted to the special study of mushrooms, puffballs, earthstars and other kinds of fungi.

The prospectus of the society states: "You are invited to become a member of this society. The only requirements are that you will endeavor to forward five or more species with notes per year . . . There are no dues."

The secretary of the society-without-dues is Miss Elizabeth E. Morse, whose office is in the Life Sciences Building.

From the large number of specimens collected in this and other ways, Miss Morse has recently segregated out an entirely new genus of puffball, a curious plant with its tough outer skin sculptured into markings more or less suggestive of those on a turtle's shell. She has given her new fungus the name *Calbovista subsculpta*.

Science News Letter, June 8, 1935

ARCHAEOLOGY

Fake Manuscripts Being Marketed to Scientists

DECLARING that the recently discovered Gomesta Manuscript, hailed as a Rosetta Stone for the Maya hieroglyphics, is a hoax, Frans Blom of Tulane University warns scientists that attempts are being made to market several faked documents in Mexico and Guatemala.

The Gomesta Manuscript, which offers a Spanish translation of Maya hieroglyphs by R. Gomesta, a Spaniard of Conquest days in Mexico, and which Mr. Blom believes not old at all but a fabrication perpetrated by an unknown person about 1900, was published several months ago by the Maya Society. Dr. William Gates of the Johns Hopkins University prepared the manuscript for publication and compared it to the famous Rosetta Stone which unlocked the mystery of Egypt's hieroglyphics.

In a manuscript report which Mr. Blom has written for "Maya Research," a quarterly published by the Alma Eagan Hyatt Foundation in New York, he states that the Gomesta Manuscript has been closely studied by Dr. Herman

Beyer, Prof. Alfredo Barrera Vasquez, and himself.

"We find the manufacture of the 'Gomesta Manuscript,' the long heralded 'Rosetta Stone' of Maya characters, was concocted with the aid of Beltran via Pio Perez' Coordination and Brinton's Primer," writes Mr. Blom.

These two books deal with Maya writing and language and were published respectively in 1898 and 1895.

"At least thirty times we can trace the illustrations or parts of them direct to Brinton," Mr. Blom states.

Stressing how welcome a "Rosetta Stone" to Maya hieroglyphic writing would be, Mr. Blom says that "for years, Maya students have turned pages of dusty manuscripts in large and small libraries in hope of finding such a rare document."

Science News Letter, June 8, 1935

ARCHAEOLOGY

Ruins on Island Give Old Mayans New Boundary

DISCOVERY of ruins at a lake in Spanish Honduras pushes the known territory of the early Mayan civilization 80 miles farther east. So Frans Blom of Tulane University reports, as a result of explorations which he made in the season just ended.

Mr. Blom and his party found the ruins, unexpectedly, about 80 miles east of the well known Mayan city of Copan, on Lake Yojoa. In the lake they encountered a small island artificially rebuilt into terraces and mounds in the Mayan style of providing high foundations for structures. On one mound could still be seen stone columns carved with the head of the great Mayan serpent god.

The ruins date probably from about the time when Copan was at its height, said Mr. Blom, that is, in early centuries of the Christian era. At that time there was a flourishing community on the lake shore.

Several other ancient cities, not previously known, were also found.

Plans to return to Honduras, to write the geography of the country, are being made, Mr. Blom stated. No systematic studies of the geography have been made since 1850, and school geography texts written in current years still quote those early researches. The project is expected to take from three to five years, and will make clearer the background on which the early Mayan cities grew up.

Science News Letter, June 8, 1935

CHEMISTRY

Philippine Seeds Yield Oil That May Rival Tung

BAGILUMBANG!

That fireworks-sounding name may be the signal for a new foreign invasion of the American paint and varnish industry, benefited years ago by the coming of the more tersely-titled tung oil from China.

Bagilumbang oil is a product of the Philippines, and the big-seeded fruits that produce it are now being raised on a small experimental scale in Florida. Oil extracted from these Florida seeds was demonstrated by two U. S. Department of Agriculture chemists, Dr. G. S. Jamieson and R. S. McKinney, before the meeting of the American Oil Chemists Society.

The oil, a limpid, light-colored fluid, resembles tung oil in its valuable quick-drying properties. Bagilumbang trees prefer a limestone soil, in contrast to tung oil trees, which cannot abide lime and are grown most successfully in the hopelessly-looking sandy soils of northern Florida and the Gulf coast.

Science News Letter, June 8, 1935

AERONAUTICS

Will Watch Stratosphere Balloon With Telescope

AN EYE more used to watching the remoter heavens will be training an eight-inch telescope on the stratosphere balloon Explorer II, if it drifts within 50 miles or less of Des Moines.

Dr. D. W. Morehouse, astronomer, president of Drake University and director of the Des Moines Municipal Observatory, is preparing to take accurate position observations on the big bag, if it floats within sight, just as though it were a comet or other stranger in outer space. In good "seeing weather," his instrument can pick up an object of that size at a range up to 50 miles, if it floats as high as stratosphere balloons are wont to do, says Dr. Morehouse.

Last summer, Dr. Morehouse kept lone and vain vigil, while the stratosphere balloon met mishap over Nebraska.

Science News Letter, June 8, 1935

EX FIELDS

PHYSIOLOGY

Hypnotist Can Make Empty Stomach Act as Though Fed

A HYPNOTIST can make an empty stomach believe it has been given a full meal, and the digestive organ acts accordingly.

While it has been known that hypnotists could make their subjects think they were either hungry or well-fed, it has remained for a group of scientists at Wayne University to demonstrate that the feeling is not merely mental but is based on an actual physical change in the state of the stomach following the hypnotic suggestion.

Details of the experiment were reported by Drs. H. L. Frick, R. E. Scantlebury and T. L. Patterson to the American Physiological Society.

Their subject was a 34-year-old man who was hypnotized after he had been fasting for 18 or 20 hours. With special apparatus, including small balloons, for observing the activity of the stomach, the Wayne University investigators timed the normal hunger contraction periods of this man's stomach. Then the hypnotist suggested that the subject had eaten. The hunger contractions were immediately checked, just as they would have been if the subject actually had eaten.

Science News Letter, June 8, 1935

PSYCHIATRY

Find Senility May be Due To Unknown Body Poisons

SENILITY and certain changes of old age may be caused by some unknown poisonous substance in the body.

This suggestion and a new significance for the old expression "second childhood" were presented by Drs. David Rothschild of the Foxborough, Mass., State Hospital and Jacob Kasanin of the Rhode Island State Hospital for Mental Diseases at the meeting of the American Psychiatric Association.

In the light of their studies they suggest a new psychological explanation for "second childhood" as follows:

"The individual as he grows older wants to become younger and younger, and so he over-compensates for it by laps-

ing, not into middle age, but going beyond this and beginning to act like a child."

These new ideas developed through a study the psychiatrists made of a relatively rare ailment called Alzheimer's disease. In their experience, they state, the disorder is by no means uncommon. The disease is characterized by symptoms of progressive mental weakness, something like senile dementia, in which the patient becomes confused, loses his memory and is unable to talk. These changes in Alzheimer's disease, however, start in middle age, much earlier than loss of memory and other signs of mental deterioration due to senility set in.

Along with these clinical symptoms are certain changes of the brain tissue found in both Alzheimer's disease and senile dementia.

The interesting point of the study reported is that Drs. Rothschild and Kasanin found these same changes in two patients suffering from physical disease. One of these patients had heart disease and the other cancer.

This discovery suggested that senility and certain changes of old age may be caused by some unknown poisonous substance in the body.

Science News Letter, June 8, 1935

ARCHAEOLOGY

Soviet Scholars Decipher Dead Language of Mongolia

DECIPHERING 5,000 hieroglyphs of a forgotten language, 900 years old, has been achieved by the Oriental Studies Institute of the Soviet Academy of Science. Working out the pronunciation of the long-forgotten speech, and writing a dictionary are the duties next scheduled.

The dead language, brought to life again, was used by the Tangut State which ran its career in Mongolia between the tenth and thirteenth centuries, until Mongols wiped it out.

With its writing now deciphered, further studies are expected to show what the regime of the Tangut was like, and its social and economic relations. The only collection of its literature in existence belongs to the Soviet Academy and is the source material for the language studies. The collection not only includes poetic works and ancient sayings but twenty volumes of a Statute Book of the Tangut State. It is this governmental work which is expected to be particularly enlightening regarding the forgotten nation.

Science News Letter, June 8, 1935

ASTRONOMY

Nova in Herculis Grows Brighter After Fading Out

THERE is still brilliance in the famous "new star," Nova Herculis, that burst forth last mid-December, even though it has faded to less than naked eye brightness. Harvard College Observatory has found that it is now magnitude 10 although in April it had decreased to magnitude 13. At its best, Nova Herculis was about second magnitude and brighter than many well-known stars.

Science News Letter, June 8, 1935

MENTAL HYGIENE

Medical Course Is Strain On Students' Mental Health

HUMAN tragedies encountered by the young medical student in the course of his training put a severe strain on his mental, as well as his physical health, members of the American Psychiatric Association learned from Drs. Edward A. Strecker, Kenneth E. Appel, Harold D. Palmer, and Francis J. Braceland, of the University of Pennsylvania, and the Pennsylvania Hospital in Philadelphia.

But the development of professional ability serves as a sort of balance wheel to relieve these strains and improve the mental health, these investigators found.

Suffering, sickness, tragedy and death are part of the daily environment in which the young medical student must get his training, the physician pointed out. Birth and death, hopelessness, misery, love and courage, he meets in stark forms. His religion, his ideals, and his standards of right and wrong are constantly being assaulted and tested.

The effect these daily stresses have on the personality and mental health of the individual student was studied by means of a questionnaire which was filled out anonymously by many medical students.

Frank and illuminating were the replies. They told of increased consumption of alcohol, a changed attitude toward women, disturbing palpitations of heart, and even sometimes of atheism.

Neurotic symptoms and instability develop in the majority of students some time during the course of their study, it was found.

As the students developed professional ability, however, these problems were cleared up. Their acquisition of capacity and technique contributed in an important way to their mental health.

Science News Letter, June 8, 1935

PALEONTOLOGY

Titan-Beasts

Monstrous Animals That Walked the Earth Some Fifty Million Years Ago Restored at the American Museum

By DR. FRANK THONE

See Front Cover

GIANTS were on the earth in those days—Titans.

Not the immense mortal men of old Greek mythology, who piled mountain on mountain in a vain war against the gods of high Olympus, but tremendous beasts that might well have served as steeds to these giant legendary warriors.

Only one discrepancy prevents: the Titans never lived; the Titan-Beasts did. Greek authors wrote epics of the Titans' battles, Greek artists painted them, so convincingly that generations of their countrymen (the most intelligent men who ever lived) believed in them implicitly. But no skull or spear or shield of Titan did they ever produce, so that at last the Titans failed in the faith of men as they had failed against the might of the gods.

Later justice, but more lasting, has been the fate of the Titan-Beasts. Long after they had lost all chance of having appropriate riders, the Titanotheres have been made alive again by the magic of science. At the American Museum of Natural History in New York, scientists have written their epic, artists have painted their pictures. And the seal of verity has been placed on this monument to their memory by their own monumental bones, gathered from lands that were not even myths to the Greeks of old.

Osborn Likes Big Ones

Outstanding among the scientific Homers who told the story of the Titan-Beasts is Prof. Henry Fairfield Osborn, until recently president of the American Museum of Natural History. Long a leader among researchers in paleontology, the study of ancient life on the earth, Prof. Osborn has had a special leaning toward sizeable fossil pets—he has done classic work on extinct elephants, as well as on the Titan-Beasts.

Closely associated with him have been Dr. Walter Granger and Dr. William K. Gregory, of the Museum scientific staff, and the artist C. R. Knight, whose portraits of animals no man ever saw

alive have won him world recognition. With the aid of these and other students, Prof. Osborn has assembled all known data about the Titan-Beasts into one monograph that is a Titan-Book—its two volumes total more than four inches thick, and weigh sixteen pounds. Most of it is much too tough going for the non-specialist reader, so various members of the Museum staff have prepared more popular accounts of the big animals which may be found elsewhere. The big book itself is a Government publication, put out by the U. S. Geological Survey.

The Titan-Beasts, or Titanotheres (Greek, meaning exactly the same thing) were big creatures, requiring plenty of leg-room. It is appropriate therefore that our first knowledge of them came from the great open spaces of the American West—the plains and mountain plateaus of Wyoming, Dakota, Nebraska. From these regions came first fragmentary bits of massive bones—some of the first pieces nearly a hundred years ago. Later, Museum expeditions began excavating whole bones, and more or less complete skulls, and considerable parts of skeletons.

First Known in America

Patiently fitting the pieces together, like jigsaw puzzles on an enormous scale, scientists presently began to get an idea of the amazing sheer size of the animals, but also of their structure (quite as amazing), and of their place in the animal kingdom—their kinship to both the living and the dead.

Although America was the only known home of the Titan-Beasts for a long time, Prof. Osborn was not satisfied that this seeming monopoly was real. He knew, from his own studies of the migrations of other animals, how the tides of life have flowed back and forth between this continent and Asia, and he prophesied that a search in the latter continent would turn up Titanothere bones. And he was right. Expeditions from his own museum found them, in rock strata above those containing the famous dinosaur bones and eggs which they brought back from Asia's inner deserts and steppes.

Although the Titan-Beasts came final-

ly to a stature of eight feet or so at the shoulders, they started out much more modestly. The earliest recognizable members of the family, away back in the eocene, when the giant dinosaurs had been dead only a mere 75 million years, were no bigger than good-sized St. Bernard dogs—three feet at the shoulders. They were, however, much more massively constructed than dogs; looked more like stocky little rhinoceroses without horns.

Before the days when they could be recognized definitely as evolving Titan-Beasts, they had an ancestry leading back to the same group of primitive animals from which evolved also three groups of animals still in existence: horses, tapirs and rhinoceroses. One commonly thinks of the Titanotheres as resembling rhinoceroses most closely, perhaps because the family soon took to wearing horns on their noses, but the Titan-Beasts had some anatomical points in common with horses and tapirs as well.

Tremendous Nose-Horns

Through the ages they grew in size, and as they got up in the world they began to "put on style," especially in the matter of horns on the nose. These began as low, blunt points, but finally reached proportions that would put the great polished spear of the modern Indian rhinoceros to shame. One Asiatic Titan-Beast developed a veritable nasal battering-ram, almost as high as his head was long.

A notable thing about these horns was that they grew in pairs, side by side, instead of in tandem, one in front of the other, as in the present-day two-horned rhinoceros. Whether these formidable nasal weapons were of any use to the animal except in fighting there is no present way of knowing.

Bigger and bigger grew the evolving Titan-Beasts, until at last the largest American species was a fourth higher at his shoulders than the largest existing Asiatic rhinoceros; and he was correspondingly heavier in the body. Standing as high as the average (though not the largest) Indian elephant, he must have been a great deal heavier, because his legs were relatively shorter, like those of a rhinoceros. He has been named *Brontotherium*, which means Thunder-Beast.

Then, having reached the climax of their bulky majesty, treading in apparent security on an earth that was theirs for

ever—they vanished swiftly and completely. Not the remotest direct descendant of a Titan-Beast is left alive today.

The search for Titan-Beast remains in Asia led to the discovery of an even more tremendous animal, the largest mammal that ever walked the earth, so far as we know today. This was the towering monster known as *Baluchitherium* in English, the Beast of Baluchistan, a giant more than double the height of the Thunder-Beast *Brontotherium*.

Baluchitherium was first discovered by a Cambridge University scientist, Dr. C. Forster Cooper. Visiting the American Museum as a graduate student, he was inspired by the bold vision of Prof. Osborn to go hunting extinct giants in the difficult mountain country through which the armies of Alexander the Great had once had such a tough time making their way. He knew he would be taking a chance of getting sniped at by Afghan tribesmen (they don't like strangers, and they are devilish good marksmen), but being a proper Englishman he was willing to take a sporting chance.

He was correspondingly rewarded. From the hills of Baluchistan he brought out the most enormous mammal bones anybody had ever seen. One, the axis-bone of the great beast's neck, formed a camel load all by itself.

Dr. Forster Cooper at first called his mountainous mammal *Thaumastoherium*, which means "Wonder-Beast." But he found that another scientist had already given that name to a different animal. So he called it *Baluchitherium*, in honor of the land where he had found it. For its second or specific name he called it *osborni*, dedicating it to the American scientist who had set him on his great adventure. Subsequently more bones of the same kind of animal were found in the Gobi Desert by expeditions of the American Museum.

Baluchitherium is not one of the Titan-Beasts, though it belongs in the same general animal cousinship. It seems to have developed only in Asia, and its race either did not last long or (more probably, really) its family history is as yet quite imperfectly known. It seems to have been rather more like the rhinoceroses than were the Titan-Beasts.

A Synthetic Monster

Recently Dr. Gregory, with the skilled assistance of a woman artist, Mrs. Helen Ziska, took all the bones of the Baluchistan Beasts he could get—some 200 of them, from several different animals—and made a new study and restoration.

The job was complicated by the fact



GROWTH BEFORE DESTRUCTION

The Titan-Beasts began little and grew big, in the course of the ages. Then they died off. This model is at the American Museum of Natural History.

that no two of the animals had been of the same size, so he had to calculate them to a common standard by endless measurements and computations. Finally, at the end of a couple of years of labor, he could set forth his results: the biggest *Baluchitherium* stood no less than seventeen feet nine inches high at his shoulders! This tops the head of the biggest extinct elephant by four and a half feet, and the horn-tips of the modern giraffe by a foot and three-quarters. The great animal is estimated to have weighed as much as 100 grown men, and to have required 500 pounds of food every day. Perhaps it is just as well that there are no living specimens for zoos or circuses to support, in these tight times.

Biggest Land Mammal

Baluchitherium was not the biggest animal that ever lived. The biggest of all animals is living today—the modern sperm whale. Nor was he the biggest land animal that ever existed. Some of the dinosaurs were bigger; though it has been conjectured that these immense reptiles, extinct millions of years before his time, stayed in the water a good deal and thus got part of their weight held up free of charge.

But *Baluchitherium* was without question the largest of land mammals we know anything about, living or dead. He was the largest of warm-blooded creatures that ever went on four feet. That should be distinction enough.

Like the Titan-Beasts, this great Beast

of Baluchistan vanished from the earth swiftly—even abruptly, so far as the known geological records show. What could have done such unconquerable giants in so quickly and so completely?

One guess is as good as another. They had nothing much to brag of in the matter of brains, for one thing. Perhaps when times got bad they did not have sense enough to adapt themselves to new ways, and went the way of all conservatives in all revolutions. Or perhaps they were suddenly hit by some devastating disease. Being so big, there probably never were very large total numbers in their herds, so that a single severe epidemic may have set them on the road to the vanishing point.

Whatever may have been the cause, they went. Like the huge dinosaurs before them, they give new and emphatic point to that most puzzling of evolutionary phenomena—the Non-survival of the Biggest.

Science News Letter, June 8, 1935

The restoration painting reproduced on the cover of this issue of the SCIENCE NEWS LETTER was made some time ago by Charles R. Knight, under the direction of Prof. William K. Gregory. Subsequent researches have necessitated some modifications in detail, though the main outlines are correct. See also SNL, April 13, p. 231.

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Cornell University states that only apple varieties of high dessert quality, such as McIntosh, justify the risk and expense of transplanting.

CLIMATOLOGY

Cycle Study Hints End of Drought

Sunspot Maxima and Minima Both Marked by Droughts

By DR. FREDERIC E. CLEMENTS,

Ecologist, Carnegie Institution of Washington.

AS EARLY as the middle of last autumn, it was fairly evident that the indications for super-normal rainfall on the Pacific Coast for the season 1934-35 would be verified. On this assumption, a comparison was made of the state averages during the past sunspot cycle for these three states and the six in the tier from North Dakota to Texas, and this revealed that the departures had been in harmony for nine out of twelve years.

This relation was sufficiently close to warrant the further supposition that rainfall in the drought region generally would approximate normal during 1935. It was likewise plausible to assume that the break in the drought would occur during the latter part of April or early May as the transpiration increased with the growth of vegetation.

The basis for these anticipations (which are hardly to be dignified by the term prediction) has been laid by general studies of solar cycles and climate during the past fifty years and by specific ecological ones of drought and sunspots for the past twenty.

As an outcome of these, drought has been found to occur at each high maximum and on or near all minima. Hence, it is a pertinent question whether low maxima of sunspots may not coincide with times of high rainfall, and this is seen to be the case for all those that have occurred since 1837.

It is important to recognize that the rainfall cycle is much more irregular than the sunspot cycle, which continues to rise or fall in the respective phase but at an uneven rate. The rainfall cycle is better designated as a trend, characterized by marked deviations falling usually at sunspot maxima and minima and hence cyclic to this extent. Thus, on the basis of the indices already mentioned, the general precipitation for the next three or four years should exceed the average.

Two facts of the first importance for the program of land utilization and social rehabilitation in the West emerge

from the consideration of the rainfall record. The first is that drought has occurred again and again through the course of the past hundred years and that it is certain to recur and demand a costly reckoning at similar intervals in the future. Over against this may be set the corollary that it will not persist indefinitely or permanently and that lands regularly productive in the past will again become so, if not too greatly damaged by erosion. Conversely, marginal areas of precarious agriculture will inevitably remain such, except for a transitory "good" year or two at long intervals.

For the great national projects that require sowing and planting, such as the shelter-belt, erosion control, restoration and construction of grazing ranges, and the natural landscaping of highways and parks, the augury is auspicious for favorable rainfall up to the next sunspot maximum in about 1939. The date and intensity of this can be approximated with increasing accuracy year by year and a corresponding assumption made as to its probable effect upon rainfall and the economic and social problems that reflect this.

Science News Letter, June 8, 1935

Wet Years Indicated For Pacific Coast States

By DR. GEORGE F. McEWEN,

Professor of Dynamical Oceanography,
Scripps Institution

STUDIES of the regional seasonal Pacific Coast precipitation indicate a long cycle of about 25 years now rising to a crest that should be reached by 1940. A five-year cycle is also clearly indicated, a low point being at 1933-34 and a high point at 1936-37. Accordingly the outlook is good for an excess of precipitation for the Pacific Coast during the next few years.

In general, however, experience with a great many series has shown that the cyclical ranges are not great enough compared to the accidental variations to permit any but the crudest advance indications for a particular season, although forecasts for a period of years may be reasonably reliable.

In studying the rainfall record to de-

tect cycles, if any exist, a relatively simple method can be followed. First, the seasonal precipitations for a number of years are "spotted in" on a graph, so that a line connecting their ups and downs will trace a rough curve.

Just by looking at the curve, it can usually be told where it should fit on as an extension of a previously existing graphic record of the same cyclic series. Then, by appropriate mathematical methods, the rough curve is "smoothed."

This "smoothing" process tends to suppress the records of shorter cycles that might show up on the same curve, as well as the purely chance variations that it is really desired to iron out. However, a short cycle thus suppressed can be restored by noting the ups and downs in the graph of the difference between the smoothed and observed values, and deciding on the probable cycle length. Then the differences occurring in each successive interval of the cycle length should repeat approximately, and their combination by ironing out accidental variations should reveal the average cyclical change. These average cyclical values, added to the smoothed curve, afford a better representation of the actual series and its extension to be used in making forecasts.

The "reality" of a cycle thus arrived at should be tested, and the cycle used in calculating tentative forecasts only if it is strongly evident that the series of rises and drops constituting it has a factual, rather than a merely chance basis. Various methods of making such tests have been derived from the theory of probability.

Making use of the well established five-year cycle, a forecast was made dur-

ORADIO

*Tuesday, June 11, 3:30 p. m., E.S.T.
ASTRONOMY AS A HOBBY, by Dr. Oliver J. Lee, Director, Dearborn Observatory, Northwestern University.*

*Tuesday, June 18, 3:30 p. m., E.S.T.
EARTH'S TREASURE HOUSES OF THE METALS, by Dr. Edson S. Bastin, Professor of Geology, University of Chicago, and Chairman of the Division of Geology and Geography of the National Research Council.*

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.

ing the fall of 1933 of precipitation well below the normal for 1933 to 1934. This proved to be a very dry year not only in California but throughout the whole United States as well.

Science News Letter, June 8, 1935

Weather States "Match" In Widely Separated Regions

By H. H. CLAYTON, Editor, World Weather Records

WEATHER conditions in certain parts of the earth closely resemble conditions occurring simultaneously in far distant regions. These conditions may be alike or they may be opposite in character. For example, excesses of temperature in central North America are frequently coincident with excesses in central South America. An excess of rain in the central United States is frequently coincident with a deficiency of rain in Australia. An excess of pressure in central South America is usually coincident with a deficiency of pressure in India.

These coincident occurrences are generally accepted by meteorologists, but they are not so well agreed as to whether there are regular meteorological cycles. The reason of this difference of opinion is evidently due to the fact that meteorological cycles are much more complex than has been generally supposed.

The reason for this complexity, in my opinion, is due to the fact that opposing centers of oscillation in the atmosphere are subject to progressive motion; so that any particular region is first in one center of oscillation and later in an opposing center, and all traces of periodicity are lost in the opposing oscillations.

It is now becoming evident that the changes in position of these centers are brought about by changes in intensity of solar radiation. When these two facts are accepted, namely, the fact of moving centers of oscillation in the atmosphere and the influence on them of changes in solar radiation, I believe the study of weather cycles will make rapid progress.

In my opinion the great drought in the region between the Mississippi and the Rocky Mountains was closely connected with solar changes. In order to understand it, not only the sunspot changes, but longer and shorter changes of solar activity will need to be taken into account.

Science News Letter, June 8, 1935

In total bulk, the biggest whales are bigger than any dinosaur that ever lived.

MEDICINE

Artificial Fever With X-Ray Destroys Animal Cancers

EVER treatment combined with small repeated X-ray doses give better results in treatment of a certain type of cancer in rabbits than either method alone, Dr. Stafford L. Warren with John J. Jares, and Otto Sahler of Strong Memorial Hospital, Rochester, N. Y., have found in preliminary tests of this method of attack on cancer.

This study was announced in the report of the International Cancer Research Foundation of Philadelphia which is supporting Dr. Warren's research.

Application of Dr. Warren's work to human cancers is far in the future, if it proves possible. So far he has worked with only one type of cancer and only on small numbers of animals.

Three years ago, working with funds from the Rockefeller Foundation, Dr. Warren found that high fever temperatures would kill cancer cells outside the body within a definite period of time. He found the high temperature also destroys cancer cells in the body, but only in one-fifth of the cases. Small repeated doses of X-rays, called fractional doses, destroyed the cancers in nearly half (42 per cent.) of the cases. When the fever treatment was combined with the fractional doses of X-rays, the percentage of apparent cures was doubled (84 per cent. of the cases).

Other research reports announced by the International Cancer Research Foundation include:

For the first time human cancers can be kept alive and growing for long periods of time outside the body. Dr. George O. Gey of the Johns Hopkins Medical School reported this new method which should aid greatly efforts to find better ways of destroying cancers. The mystery of why cells become malignant may be nearer solution.

The preparation of another cancer-producing substance from coal tar by Prof. J. W. Cook and associates at the London Free Cancer Hospital. Prof. Cook's latest discovery shows the importance of a certain kind of chemical architecture in cancer-producing substances from coal tar. A combination of carbon and hydrogen known to chemists as the methyl group—the same methyl group that is in deadly methyl alcohol or wood alcohol—occurs twice in the new cancer-

producing compound. Apparently more important than the methyl group itself, in connection with the cancer-causing property of the new substance, is the place where it is attached to the substructure of the new substance as its molecule is built up. Even a single methyl group at "position 5" causes marked cancer-producing activity.

Calories also have an important relation to cancer. Studies on this phase of the problem have been made by Dr. Fritz Bischoff and co-workers of the Santa Barbara, Calif., Cottage Hospital. Growth of cancers in mice is notably affected by reducing by one-half the amount of calories in the diet of the mice, the California scientists found. Weight loss in itself is not a clear indication of the nutritional state, they found, as other factors enter in. Consequently they point out to fellow scientists the importance of determining caloric intake.

Science News Letter, June 8, 1935

MEDICINE

Lack of Publicity Blamed For Thriving of Quacks

LACK of publicity in the medical profession was blamed for the thriving of so-called health lecturers and psychological and medical quacks by Dr. Charles A. Rymer of Denver, Colo., speaking to the American Psychiatric Association.

The misinformation spread by these quacks, especially in the field of sex, may cause untold damage to the persons who are already unstable mentally and emotionally and to those who try to obtain free medical information in order to treat themselves, he said.

It is the public's growing and widespread interest in science that makes possible the success of these quacks, Dr. Rymer pointed out.

"People are impressed with the advances which have been gained through the scientific approach, but since they lack the proper prospective and background to determine what constitutes science, they attribute almost magical properties to anything labeled 'scientific,'" he said.

"What substitute has the profession to offer?" he demanded of his fellow physicians.

"We criticize the quack for his methods; yet the medical profession is to blame to a certain extent for his existence. People believe the falsehoods of the quack because there are few means other than that of direct consultation with the doctor to counteract these beliefs."

Each county medical society should accept the challenge of the quack by offering correct instruction about health, he recommended. He also urged that

each city establish a board of physicians to examine the credentials of any lecturer claiming the ability to heal disease irrespective of its nature.

"Government has long recognized as a necessary safeguard to the public the importance of licensing individuals in many trades and professions," Dr. Rymer said, "we see no reason why the quack should be allowed to practice without restriction."

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PSYCHOLOGY

Poets Reveal Their Thought Processes to Psychologist

THE INNER workings of the minds of poets as they compose their verse were revealed to psychologists by Miss Catharine Patrick of New York City, in a report to the New York branch of the American Psychological Association.

Padraic Colum, Edward Davison, Eunice Tietjens, Vivian Laramore, the poet laureate of Florida and many other prominent poets, numbering fifty-five in all, were interviewed by Miss Patrick and asked to compose a poem while she recorded their methods of work. These made-to-order poems did not suffer in literary merit, but followed the characteristic style of the authors and were well liked by judges who later read them. Some have since been published.

The poets, and a group of non-poets who were watched at work in the same way, go through four stages of creative thought in the attempt to compose a poem, Miss Patrick found.

First is what she calls the stage of preparation. An example of this stage is when the poet gazes at a landscape and receives different impressions from it.

Next comes the stage of incubation. A

poem may "incubate" for only a few minutes or for several years. During this time, a certain mood or idea will involuntarily be thrust upon the poet's mind while he is also thinking of other matters. This process of incubation is said by some to be due to the workings of the subconscious mind.

Illumination, the third stage, comes when the mood or idea which has been incubating becomes definitely related to a specific goal. It is then that the poem is actually put into words. Sometimes this stage is accompanied by emotion, although at others the poet may have no special feelings at the achievement of his goal. A part of the poem seems to come automatically and spontaneously by itself, Miss Patrick observed.

The final stage, of verification or revision, comes when the poet checks his work with standards of art, elaborates his idea, and changes a word or line here and there to perfect the work. In lyric poetry, the revision is not very great, it was found.

The mental working of the group of poets was like that of the non-poets in

many respects. All went through the same four stages of thought. The poets composed no more quickly and no more slowly than the non-poets. Practically no differences in vocabulary were observed, although the poets showed a slight tendency to use more rare words.

The poets put more imagination and thought into their poems than did those who were not poets. The non-poets, when shown a picture and asked to write a poem, would write about the picture; the poets were more likely to write about some other topic. When they did write about the picture, the poets would select the details, while the non-poets would choose the more obvious features.

The poets are more influenced by the conventions of modern poetry, and the literary merit of their productions was judged to be higher than that of the non-poets.

Science News Letter, June 8, 1935

AVIATION

Steel in Burial Vaults Leads to Safer Flying

BECAUSE steel is being used for the construction of burial vaults in cemeteries aircraft navigation has been greatly improved.

The strange story linking two seemingly unrelated happenings of life was described by Prof. Philip Kissam, of the Princeton University School of Engineering.

To correct compasses for the shift in magnetic north, the Coast and Geodetic Survey has markers in various localities as points of reference for magnetic observations. These markers must be undisturbed and sufficiently distant from all steel structures that might affect the magnetic field. For a long time cemeteries have provided very suitable sites.

With the introduction of steel in burial vaults, however, cemeteries no longer were useful, and it occurred to Prof. Kissam that airports would be the place.

At the same time came the idea of using the markers to correct airplane compasses, and the subsequent development of the "Compass Rose," so-called because of its resemblance to a flower.

The "Compass Rose" has as its central point the Coast and Geodetic Survey marker. This is encircled by 12 other markers spaced 30 degrees apart and at a distance of 50 feet from the center. An airplane can thus formulate a table of corrections for its compass by lining up with the central marker and each of the others in turn.

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ENTOMOLOGY

NATURE RAMBLINGS by Frank Thone



Bites and Stings

BITES and stings are the really inevitable vacation handicaps. Poison ivy and nettles, thorns and thistles we can avoid, if we see them in time. They are rooted; we have to go to them to get into trouble. But the many-legged, many-winged bearers of bites and stings can and do pursue us, defy smudges and ointments, wriggle through chinks in our screen armor.

We get bitten, as a rule, because some creeping or flying thing wants a meal at our expense: mosquitoes, deerflies, ticks, sandflies and their all too numerous ilk are simply hungry. We get stung, usually, because we have injured or angered or unintentionally menaced: bees, hornets, scorpions merely strike in self-defense. But no matter what the cause, the afflicted ones (and that includes pretty much all of us) want a cure.

For bites, the general rule may be laid down: soothe, don't scratch. Scratching a bite seldom brings any real relief, and may set up infection. A wet cloth, soaked in a mildly alkaline solution like ammonia or baking soda, will do more to relieve mosquito-bite itch than any amount of rubbing.

When you get stung, the first thing to do is to get the sting out of the wound—for bees usually leave their bayonets sheathed in their victims' flesh. It is better to lift the sting out with the tip of a penknife than to pull it out with fingers or tweezers. The latter method will squeeze more poison into the wound, from the still-adhering poison sacs.

Treatment after stinging will depend on what stung you. If it was a bee, the poison is acid, and should be counteracted with an alkaline solution, as in the case of a mosquito-bite. If the stinger was a wasp or hornet, the poison is alkaline,

and acid treatment is called for. Vinegar or lemon juice are ready remedies.

The more serious kinds of biters, like snakes and the now notorious black widow spider, should not be permitted to spoil your vacation through fear. The chances are very decidedly against your meeting up with them. Most snakes, including the dreaded rattlers, will keep out of your way if they can. And spiders are equally fugitive.

If bitten by a snake, get the poison out of the wound as well as you are able, by sucking (making sure your mouth

has no raw spots or cold sores in it), and by inducing bleeding by cutting the adjacent tissues. Do not, under any circumstances, drink whisky. Lie as still as possible, and have your friends rush a doctor to you.

In the unlikely event of a black widow bite, lie still and call a doctor. You may feel sure that you are going to die, but you probably won't. Black widow bites make their victims rather severely sick, but are not nearly so deadly as they are reputed to be.

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GEOGRAPHY

Russian Scientist Celebrates A Jubilee of Exploration

AJUBILEE—50 years of exploration for science—is attained this spring by 72-year-old Prof. Peter Kozlov, whose adventures in the heart of Asia have gained him world fame.

Prof. Kozlov's flat in Leningrad is a small museum of his journeys to Central Asia. His expeditions have overlooked no phase of interest in that little-known part of the world. They have studied its birds, animals and people, its rocks and lakes, its dead cities and tombs. The vast bulk of the collections repose in museums, where the specimens offer material for years of scientific study.

Born the son of a peasant, Peter Kozlov was a full-fledged scientist and already launched on his explorer's career when just past twenty. His first journey, accompanying a more experienced explorer, took him straight to Mongolia and Tibet, where he was destined to spend years of his life.

By 1893, he was speaking with authority on Central Asia, sharply criticizing erroneous theories regarding the vagrant lake Non-nor, on which he wrote an interesting book. He was now leading his own expeditions.

Discovery of the dead city of Kharokhot, during his journey across quick-sands in the Gobi Desert, is one of the highlights of Kozlov's career. Scores of European and Russian travelers had sought this buried city. Kozlov drew plans of its tremendous fortress walls, towers, and half-ruined stone monuments. He found in the ruins books in seven languages, amazingly fresh pictures, statues and domestic articles.

From the Gobi Desert, he brought

back plants of considerable interest to regions troubled with drought.

He unearthed evidence that Greek art and culture spread as far east as Mongolia. And he showed that the Greeks were not dealing entirely in myths when they talked of a land of Hyperboreans, dwellers behind the north winds. For the wave of trade and travel that relayed Greek ideas to the heart of Asia over 2000 years ago, doubtless brought back rumors of the civilization there beyond the north winds! In an ancient burying ground of this civilization in the mountain passes of northern Mongolia, Kozlov's expedition found tapestries, jade, carved figurines and other beautiful things.

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ZOOLOGY

Squirrels Chew Up Metal Tree Tags; Ignore Nails

SQUIRRELS in a Midwestern forest seem to be "getting hard." They are chewing up the metal identification tags which foresters nail on young trees—nobody knows why.

The tags are made of aluminum, fastened to the trees with copper nails. The marauders, which have been identified as gray squirrels by their tooth marks, chew up only the tags and let the nails alone.

This puzzling bit of squirrel behavior was reported by John G. Kuenzel of the Central States Forest Experiment Station, U. S. Forest Service. (*Journal of Forestry*, May).

Science News Letter, June 8, 1935

*First Glances at New Books

Miscellaneous

COUNTERFEIT—NOT YOUR MONEY BUT WHAT IT BUYS—Arthur Kallet—*Vanguard*, 96 p., \$1.50. Naming names and presenting striking photographs, manufacturers and advertisers are taken to task for trimming quality and making exaggerated claims within the law. Concluding sentence: "In the opinion of the author, goods counterfeiting cannot be ended so long as it pays; that is, so long as industry is privately owned and profits are the motivating force behind production; and to suggest any easy remedy would be to offer only one more counterfeit to consumers."

Science News Letter, June 8, 1935

Physiology

VITAMINS AND YOUR HEALTH—Margaret Elston Gauger—*Robert M. McBride*, 102 p., \$1.25. A short, lively account of the why, where and how much of vitamins with brief notes on their discovery and history.

Science News Letter, June 8, 1935

Metallurgy

METALLURGY—E. L. Rhead—*Longmans, Green*, 396 p., \$4. A new revised and enlarged edition of a beginner's text of British origin which has gone through many editions since its first in 1895.

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Geology

THE BOOK OF NATURAL WONDERS—Ellison Hawks—*Loring & Mussey*, 256 p., \$2. Geology plus human-interest stories: the geologic building of the Alps plus the account of the first ascent of Mont Blanc; an account of the volcano Krakatau plus stories of what happened during its terrific explosion a half-century ago. With such judicious bits of bait, the book will be read by many who would not otherwise touch a work on geology.

Science News Letter, June 8, 1935

Entomology—Bacteriology

KEY-CATALOGUE OF PARASITES REPORTED FOR CARNIVORA (CATS, DOGS, BEARS, ETC.) WITH THEIR POSSIBLE PUBLIC HEALTH IMPORTANCE—C. W. Stiles and Clara E. Baker—*U. S. Govt. Print. Off.*, 913 p.—1223, 20c.

Science News Letter, June 8, 1935

Engineering

THE STORY OF STEAM—Anne Coolidge and Anthony di Bona—*John C. Winston*, 48 p., 60 cents. A book which is written for children and will catch their interest at the age when the bub-

bling tea kettle on the stove is a fascination. Using a tea kettle as a jumping-off place and grand three-color illustrations, the volume takes the children—and their parents who may not be technically minded—through the interesting story of how man harnesses steam to do work.

Science News Letter, June 8, 1935

Education-Recreation

HIGH-SCHOOL CLUBS—Maris M. Proffitt—*Govt. Print. Off.*, 63 p., 10c. Appearing as Office of Education Bulletin 1934, No. 18, this booklet should prove useful in high-school libraries. Of the 816 schools reporting clubs, 364 had clubs devoted to chemistry, physics, mathematics and astronomy, and 145 had nature study clubs.

Science News Letter, June 8, 1935

Paleontology

A STUDY OF THE OZARKIAN FAUNAS OF SOUTHEASTERN MINNESOTA—Louis H. Powell—*The Science Museum of The St. Paul Institute*, Science Bull. No. 1, 80 p. and 17 plates, \$2. This monograph is of interest not only as a substantial contribution to paleontology but because it marks the launching of a new series of scientific publications. The Saint Paul Institute here sets a high standard for its future efforts along the same line.

Science News Letter, June 8, 1935

Medicine

MEDICAL TACTICS AND LOGISTICS—G. M. Blech and C. Lynch—*Charles C. Thomas*, 219 p., \$4. Medical officers and physicians or medical students who wish to prepare themselves for medical service in the event of war will find this clearly written book very helpful. The text is prepared in accordance with official regulations.

Science News Letter, June 8, 1935

Medicine

PRACTICAL ENDOCRINOLOGY—Max A. Goldzieher—*D. Appleton-Century*, 348 p., \$5. This book is written for the busy general physician, presenting the recent developments in endocrinology in a way that will be most useful to him.

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Mineralogy—Engineering

THE STORY BOOK OF OIL—Maud and Miska Petersham; **THE STORY BOOK OF COAL**—Maud and Miska Petersham; **STORY BOOK OF IRON AND STEEL**—Maud and Miska Petersham; **THE STORY OF GOLD**—Maud and Miska Petersham, 32 p. each, 60c each; **THE STORY BOOK OF EARTH'S TREASURES**—Maud and Miska Petersham, 128 p., \$2.50. The story book series of the authors is a splendid way to mold the interest of children in paths which make for a better understanding of the scientific world which—whether they realize it or not—is all about them. Beautifully illustrated in color, the first four books take up the separate fields of oil, coal, iron and gold. The fifth is the collection of all four into one volume.

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Languages

MEDICAL GREEK AND LATIN AT A GLANCE—Walter R. Agard—*Edwards Bros.*, 43 p., \$1.10.

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Medicine

TUBERCULOSIS AND THE NEGRO IN PITTSBURGH—Elsie Witcher—Tuberculosis League of Pittsburgh, 120 p., Free while present edition lasts. Send 10c for handling, if requested through Science Service.

Science News Letter, June 8, 1935

Medicine

MOUTH INFECTION—Oliver T. Osborne—*Author, New Haven, Conn.*, 119 p., \$2.00. This book, primarily for physicians and dentists, gives the author's views on the relation of mouth infections to general health—or ill health. Clinical observations from his own practice are added to illustrate his points.

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Hygiene

EVERYDAY PROBLEMS IN HEALTH—Frank M. Wheat and Elizabeth T. Fitzpatrick—*American Book Co.*, 456 p., \$1.20. A text for junior or senior high schools which has been tried, in the form of stenciled sheets, in actual classes and enthusiastically received.

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